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Private Mail Bag No. 10  
RYDALMERE, N.S.W. 2116  
Phone: 630-0251

In reply please quote

GJS:CJL

DEPARTMENT OF AGRICULTURE, N.S.W.  
BIOLOGICAL AND CHEMICAL RESEARCH INSTITUTE, RYDALMERE

Dr. J. Lederberg  
Department of Genetics  
University of Wisconsin  
Madison, Wisconsin, U.S.A.

29th January, 1974

Dear Dr. Lederberg,

I refer to my note of 21st August, 1973, concerning the origin of insecticide resistance, and the apparent paradox concerning selection advances in plants and animals (mostly polygenes) and insecticide resistance (almost invariably oligogenes). It occurs that if chemicals can "transform" haploid sex cells, as applies in say E. coli, therein a possible explanation for the comparatively rapid development of resistance, which is usually monogenic.

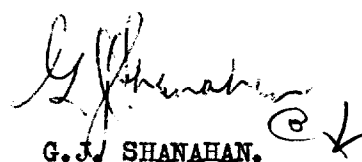
A main reason for seeking your view is: if specific mutagenesis is involved in insecticide resistance, then it may be possible to arrest or delay its appearance by varying the type of formulation to delay its contact with the gonads? I've written to Professor C.M. Williams of Harvard for comment on the latter issue.

The crucial point in regard to insecticide resistance remains. Is there anything unusual about most instances of insecticide resistance being due to single genes?

Once more, I'd be very grateful for your comments. Of resistance, as already indicated, there's one established fact - with species after species, resistance has been proved as further instances of Mendelism. This must mean, on accepted principles, that R gene alleles are present before the insecticide(s) is/used, or subsequently arise by mutation. That insecticides could be specific mutagens is an aberrant view - of course, isozyme polymorphism may be the answer - but some form of induction, of a heritable nature, would be required to give selective advantage.

I've also written to Professor Watson for comment. It's added insecticide resistance is a very critical problem throughout the world.

Yours sincerely,

  
G.J. SHANAHAN.

Shanahan, G.J.

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pesticide resistance  
Lamarck  
insect genetics